IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

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Division of:

SN 09/837320

Filed:

About October 31, 2003

For:

Synthesis of Coenzyme Q10 Ubiquinone

Mail Stop Patent Application Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

October 31, 2003

Preliminary Amendment

Please insert directly under the title

-- This application is a division of application Serial No. 09/837320, filed April 19,

2001 --

Please enter the changes made to the specification in the parent case.

Please cancel claims 1 and 15 without prejudice.

Please enter the amendments made to claims 2 and 14 in the parent case.

Please add the following claim

- 16 (new) The stereo specific optically pure trans (E) isomer of coenzyme Q10

having the formula

Ubiquinone

produced by the process

which comprises extracting solanesol from tobacco dust using hexane and using said solanesol as the starting material for carrying out the following sequence of reactions resulting in the <u>formulation formation</u> of isodecaprenol.

$$\begin{array}{c} \text{CH}_3 \\ \text{H+CH}_2\text{-C=CH-CH}_2\text{-OH} \\ \text{Solanesol} \end{array} \qquad \begin{array}{c} \text{PBr}_3 \\ \text{H+CH}_2\text{-C=CH-CH}_2\text{-Br} \\ \text{Solanesol} \end{array}$$

$$\begin{array}{c} \text{CH}_3 & \text{CH}_3 \\ \text{H}_1^{\dagger}\text{CH}_2 - \overset{\cdot}{\text{C}} - \text{CH} - \text{CH}_2^{\dagger} \overset{\cdot}{\text{CH}}_2 - \overset{\cdot}{\text{C}} - \text{O} \\ \\ \text{Solanesylacetone} \\ \\ \text{CH}_2 = \text{CHMgBr} \\ \\ \text{H}_1^{\dagger}\text{CH}_2 - \overset{\cdot}{\text{C}} = \text{CH} - \text{CH}_2^{\dagger} \overset{\cdot}{\text{CH}}_2 - \overset{\cdot}{\text{C}} - \overset{\cdot}{\text{C}} = \text{CH}_2 \\ \text{9} & \text{OH}^{\dagger} \\ \\ \text{Isodecaprenol} \end{array}$$

separately carrying out the following:

$$\begin{array}{c|c}
CH_3 & Br_2 & CH_3 \\
OH & Br & Br & DME, (CH_3O)_2CO \\
\hline
OH & CUCN \\
\hline
P-cresol & 2,3,6-tribromo-4-methyl phenol
\end{array}$$

2,3,4,5-tetramethoxytoluene

2,3-dimethoxy-5-methylhydroquinone

thereafter reacting the isodecaprenol prepared from the solanesylacetone and 2,3-dimethoxy-5-methyl-hydroquinone to form the optically pure Ubiquinone.

hexane/sodium bisulfite